



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,302	12/01/2003	David L. Powell	136089/90 (MHM 15129US01)	2838
23446	7590	11/03/2006	EXAMINER	
MCANDREWS HELD & MALLOY, LTD 500 WEST MADISON STREET SUITE 3400 CHICAGO, IL 60661			CORBETT, JOHN M	
			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 11/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/725,302	Applicant(s) POWELL, DAVID L.	
	Examiner John M. Corbett	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) The invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-2, 4, 7-9, 19-20 and 23-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Burke et al. (5,305,363).

With respect to claim 1, Burke et al. teaches a medical imaging device having a main body (See Fig 1 item II and Abstract) and an imaging element (See Fig 1 item I and Abstract); and an auxiliary module (See Fig. 1 item III) removably connected to the medical imaging device having a cooling unit (See Fig. 1 item 16) configured cool liquid to a chilled state and to circulate the chilled liquid to and from the imaging element, wherein the chilled liquid absorbs heat produced by the imaging element. (Col. 5 lines 1-11 and Fig. 2 item 10 and 12.) Note: The module is removable by any means.

With respect to claim 2, Burke et al. further teaches the imaging element includes an x-ray tube, wherein the cooling unit circulates the chilled liquid over and within the imaging element. (See Fig 1 item I and Fig. 2 item 10 and 12)

With respect to claim 4, Burke et al. further teaches a cooling duct surrounding at least a portion of the imaging element (See Fig. 2 item 10 and 12), the cooling duct having a fluid inlet and an fluid outlet; a fluid input line in fluid communication with the cooling unit and the fluid inlet, wherein the chilled liquid is supplied to the cooling duct from the cooling unit through the fluid input line; and a fluid return line in fluid communication with the cooling unit and the fluid outlet, wherein the chilled liquid is returned to the cooling unit through the fluid return line. (See Fig. 1 item 14, 16 and unnumbered fluid tube attached to heat exchanger 16 and toroidal x-ray tube I)

With respect to claim 7, Burke et al. further teaches that the auxiliary module is permanently affixed to the floor. (See Fig. 1 item 14 and 16)

With respect to claim 8, Burke et al. further teaches that the auxiliary module further comprises a booster battery pack, wherein the booster battery pack is configured to be electrically connected to the medical imaging device in order to provide additional power to the medical imaging device. (See Fig. 1 item III, Fig. 2 item 93 and Col. 6 line 66 - Col. 7 line 4)

With respect to claim 9, Burke et al. further teaches that the auxiliary module is remotely located from the medical imaging device. (See Fig. 1 item III)

With respect to claim 19, Burke et al. teaches an auxiliary module (See Fig. 1 item III) comprising a cooling unit configured to cool liquid to a chilled state (Heat pump cools) and

Art Unit: 2882

circulate the chilled liquid to and from the imaging element, wherein the chilled liquid absorbs heat produced by the imaging element (See Fig. 1 item 14 and 16, Fig. 2 item 10 and 12, Col. 5 lines 1-11); and a booster battery pack, wherein the booster battery pack is configured to be electrically connected to the medical imaging system in order to provide additional power to the medical imaging system (See Fig. 1 item III, Fig. 2 item 93 and Col. 6 line 66 - Col. 7 line 4); said auxiliary module being removably connected to said medical imaging device. Note: The module is removable by any means.

With respect to claim 20, Burke et al. further teaches the imaging element includes an x-ray tube and the medical imaging device is an x-ray imaging system. (See Fig. 1 item I and Abstract)

With respect to claim 23, Burke et al. further teaches that the auxiliary module is permanently affixed to a floor. (See Fig. 1 item III)

With respect to claim 24, Burke et al. further teaches the auxiliary module is separate and distinct from the medical imaging device. As shown in figure 1, the heat exchanger (16) is connected to the toroidal ring x-ray tube (I) through a long flexible cooling hose and the high voltage generator in section III is routed through the operator console (82) which similarly is connected to the assembly (II) by a long flexible cable.

Art Unit: 2882

2. Claims 1, 3-5, 7, 9 are rejected under 35 U.S.C. 102(a) as being anticipated by Okamura et al. (WO 03/002001 A1).

With respect to claim 1, Okamura et al. teaches a medical imaging device having a main body (See Fig. 2) and an imaging element (See Fig. 2 item 1 and 14); and an auxiliary module removably connected to the medical imaging device having a cooling unit (See Fig. 2 item 7) configured to cool liquid to a chilled state and to circulate the chilled liquid to and from the imaging element, wherein the chilled liquid absorbs heat produced by the imaging element. (See Fig. 1 and Abstract) Note: The module is removable by any means.

With respect to claim 3, Okamura et al. further teaches a C-arm (See Fig. 2 item 21) supported by the main body, wherein the x-ray tube is positioned on an end of the C-arm. (See Fig. 2 item 1)

With respect to claim 4, Okamura et al. further teaches a cooling duct surrounding at least a portion of the imaging element, the cooling duct having a fluid inlet and an fluid outlet; a fluid input line in fluid communication with the cooling unit and the fluid inlet, wherein the chilled liquid is supplied to the cooling duct from the cooling unit through the fluid input line; and a fluid return line in fluid communication with the cooling unit and the fluid outlet, wherein the chilled liquid is returned to the cooling unit through the fluid return line. (See Fig. 1)

With respect to claim 5, Okamura et al. further teaches wherein the cooling duct is considered to be removably connected to the imaging element. (14)

With respect to claim 7, Okamura et al. shows that the auxiliary module is permanently affixed to the floor. (See Fig. 2)

With respect to claim 9, Okamura et al. teaches that the auxiliary module is remotely located from the medical imaging device. (See Fig. 2 item 7)

For applicant's convenience, a copy of US Patent Application Publication document, Okamura et al. (US2004/0234040 A1), is provided as an English language translation of WIPO document, Okamura et al. (WO 03/002001 A1).

3. Claims 11-15 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Anderton (Re. 35,025).

With respect to claim 11, Anderton teaches a medical imaging device having a main body (See Fig. 1 item 13, 19 and 20) and an imaging element (See Fig. 1 item 23-25); and an auxiliary module having a booster battery pack (See Fig. 2 item 49 and Col. 13 lines 2-4), wherein the booster battery pack is configured to be electrically connected to the medical imaging device in order to provide additional power to the medical imaging device (See Fig. 2 and Col. 12 lines 41-44), wherein the auxiliary module is separate, distinct and removably connected directly to the

Art Unit: 2882

medical imaging device (Fig. 2). Note: The connection of the booster battery pack must be accomplished by a direct electrical connection, wire or cable. The electrical connection can be removed and reconnected as necessary during assembly and disassembly of the medical imaging device and for maintenance purposes. The Examiner does not accord patentable weight to the terms separate and distinct in the claim since any item that can be assembled and then disassembled is always separate and distinct when disassembled.

With respect to claim 12, Anderton further teaches the medical imaging device is an x-ray system (See Title) and the imaging element includes an x-ray tube. (See Fig. 1 item 23)

With respect to claim 13, Anderton further teaches a C-arm supported by the main body (See Fig. 1 item 12), wherein the x-ray tube is positioned on an end of the C-arm. (See Fig. 1 item 12 and 23)

With respect to claim 14, Anderton further teaches that the auxiliary module is mobile. (See Fig. 1 caster assembly attached to item 11 (mainframe), Col. 4 line 6 and Col. 12 lines 53-56)

With respect to claim 15, Anderton further teaches the apparatus of claim 11. Since claim 15 fails to further limit the structure of a medical imaging device, claim 15 is rejected with claim 11. Note: A floor or a wall is not part of the medical imaging device.

With respect to claim 18, Anderton further teaches a power boost receptacle electrically connected to a power supply system (See Fig. 2 where batteries (49) are electrically connected to the battery charger circuit (53)); a power cable electrically connected to the booster battery pack (Col. 5 lines 49-52) wherein the power cable is considered to be removably connected to the power boost receptacle so that the power supply system may draw power from the booster battery pack. (Col. 12 lines 41-44)

4. Claims 11-12, 15-16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Yahata et al. (5,226,064).

With respect to claim 11, Yahata et al. teaches a medical imaging device having a main body (See Fig. 2 item 7) and an imaging element (See Fig. 2 item 9 and 10); and an auxiliary module having a booster battery pack (See Fig. 1,3 and 4 items 5 and 5A), wherein the booster battery pack is configured to be electrically connected to the medical imaging device in order to provide additional power to the medical imaging device (See Fig. 1, 3 and 4, Col. 3 lines 43-49, Col. 4 lines 58-62 and Col. 5 line 67 – Col. 6 line 9), wherein the auxiliary module is separate, distinct and removably connected directly to the medical imaging device (Fig. 3). Note: The connection of the booster battery pack must be accomplished by an electrical connection, wire or cable. The electrical connection can be removed and reconnected as necessary during assembly and disassembly of the medical imaging device and for maintenance purposes. The Examiner does not accord patentable weight to the terms separate and distinct in the claim since any item that can be assembled and then disassembled is always separate and distinct when disassembled.

With respect to claim 12, Yahata et al. further teaches the medical imaging device is an x-ray system and the imaging element includes an x-ray tube. (See Fig. 1, 3 item 3 and Fig. 2, 4 items 9)

With respect to claim 15, Yahata et al. further teaches the apparatus of claim 11. Since claim 15 fails to further limit the structure of a medical imaging device, claim 15 is rejected with claim 11. Note: A floor or a wall is not part of the medical imaging device.

With respect to claim 16, Yahata et al. further teaches the auxiliary module is remotely located from the main body. (See Fig. 2 item 100)

With respect to claim 18, Yahata et al. further teaches a power boost receptacle electrically connected to a power supply system (See Fig. 3 where battery (5) is electrically connected to the rectifier circuit (2)); a power cable electrically connected to the booster battery pack (See Fig. 3) wherein the power cable is considered to be removably connected to the power boost receptacle so that the power supply system may draw power from the booster battery pack. (Col. 5 lines 1-11)

5. Claims 1-4, 6-7 and 25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Busse et al. (6,669,366 B2).

With respect to claim 1, Busse et al. teaches a medical imaging device having a main body (See Fig. 1) and an imaging element (See Fig. 1 item 1, 2 and 5); and an auxiliary module removably connected to the medical imaging device having a cooling unit configured to cool liquid to a chilled state and to circulate the chilled liquid to and from the imaging element, wherein the chilled liquid absorbs heat produced by the imaging element. (See Fig. 2) Note: The module is removable by any means.

With respect to claim 2, Busse et al. further teaches that the imaging element includes an x-ray tube (See Fig 1 item 2), and that the cooling unit circulates the chilled liquid over and within the imaging element. (See Fig. 2 and Col. 2 lines 55-65)

With respect to claim 3, Busse et al. further teaches a C-arm supported by the main body, wherein the x-ray tube is positioned on an end of the C-arm. (See Fig. 1 and Col. 4 lines 45-52)

With respect to claim 4, Busse et al. further teaches a cooling duct surrounding at least a portion of the imaging element, the cooling duct having a fluid inlet and an fluid outlet; a fluid input line in fluid communication with the cooling unit and the fluid inlet, wherein the chilled liquid is supplied to the cooling duct from the cooling unit through the fluid input line; and a fluid return line in fluid communication with the cooling unit and the fluid outlet, wherein the chilled liquid is returned to the cooling unit through the fluid return line. (See Fig. 2 and Col. 4 line 55 – Col. 5 line 2)

With respect to claim 6, Busse et al. further teaches that the auxiliary module is mobile. (See Fig. 1 item 4. Note wheels on bottom of console, hence entire system is mobile which includes auxiliary module.)

With respect to claim 7, Busse et al. teaches the apparatus of claim 1. The auxiliary module can be permanently affixed to one of a floor and a wall by any means. Accordingly, claim 7 is rejected with claim 1.

With respect to claim 25, Busse et al. teaches a method of cooling a mobile x-ray device having a C-arm with an x-ray tube positioned on one end of the C-arm and a detector on the other end of the C-arm (See Fig. 1 items 1-3 and 5 and Col. 4 lines 45-50), by operatively connecting the cooling unit which forms the auxiliary module in a removable fashion to the mobile x-ray device; cooling the liquid with the cooling unit (See Col. 3 lines 16-19); passing the chilled liquid from the cooling unit to the x-ray tube (See Fig. 2 and Col. 3 lines 4-11); and circulating the chilled liquid around at least a portion of the x-ray tube such that the chilled liquid absorbs heat produced by the x-ray tube during an x-ray imaging procedure. (See Col. 4 lines 61-65) Note: The module is removable by any means.

With respect to claim 26, Busse et al. further teaches providing a cooling duct around at least a portion of the x-ray tube, and wherein the passing includes passing the chilled liquid from the cooling unit to the x-ray tube through a first tube that is in fluid communication with the cooling unit and the cooling duct; and returning the chilled liquid back to the cooling unit

Art Unit: 2882

through a second tube that is in fluid communication with the cooling unit and the cooling duct.

(See Fig. 2 item 7-9 and Col. 4 line 55 – Col. 5 line 2)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura et al. (WO 03/002001 A1) as applied to claim 1 above, and further in view of Innovative Technology Summary Report (ITSR), Portable X-ray, K-Edge Heavy Metal Detector.

With respect to claim 10, Okamura et al. teaches all the limitations of the claimed invention except that the auxiliary module includes a rolling cart that supports the cooling unit.

ITSR teaches an auxiliary module for an x-ray imaging system that includes a rolling cart that supports a cooling unit. (See Fig. 5 and 9)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the stationary auxiliary module of Okamura et al. to include the cart system of ITSR to make the module mobile since a person would have been motivated to increase flexibility in the use of space around the medical imaging system so that additional equipment,

Art Unit: 2882

such as patient life support and monitoring systems, would be conveniently arranged in the room housing the medical imaging system during imaging.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yahata et al. (5,226,064) as applied to claim 11 above, and further in view of Innovative Technology Summary Report (ITSR), Portable X-ray, K-Edge Heavy Metal Detector.

With respect to claim 17, Yahata et al. teaches all the characteristic features of the invention as described above, but fails to teach that the auxiliary module includes a rolling cart that supports the booster battery pack.

ITSR teaches an auxiliary module for a portable x-ray system that includes a rolling cart and that supports the high voltage unit. (See Fig. 5 and 9)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the stationary auxiliary module of Yahata et al. to include the cart system of ITSR to make the auxiliary module mobile since a person would have been motivated to increase flexibility in the use of space around the medical imaging system so that additional equipment, such as patient life support and monitoring systems, would be conveniently arranged in the room housing the medical imaging system during imaging.

8. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burke et al. (5,305,363) as applied to claim 20 above, and further in view of Busse et al. (6,669,366 B2).

Art Unit: 2882

With respect to claim 21, Burke et al. teaches all the limitations of the invention except that the x-ray imaging device includes a C-arm having a first and second prong, wherein the x-ray tube is positioned on the first prong, and a detector is positioned on the second prong.

Busse et al. teaches an x-ray imaging device that includes a C-arm having a first and second prong, wherein the x-ray tube is positioned on the first prong, and a detector is positioned on the second prong. (See Fig. 1)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the medical imaging system of Burke et al. to include the C-arm configuration of Busse et al. since a person would have been motivated to use the less restrictive open structure of the C-arm configuration for positioning the imaging element about the patient rather than the more restrictive closed structure of the toroidal configuration.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burke et al. (5,305,363) as applied to claim 19 above, and further in view of Innovative Technology Summary Report (ITSR), Portable X-ray, K-Edge Heavy Metal Detector.

With respect to claim 22, Burke et al. teaches all the limitations of the invention except that the booster battery pack and the cooling unit are on a mobile cart.

ITSR teaches an auxiliary module for a portable x-ray system that includes a rolling cart and that supports the high voltage unit and cooling unit. (See Fig. 5 and 9)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the stationary auxiliary module of Burke et al. to include the cart system of

Art Unit: 2882

ITSR to make the auxiliary module mobile since a person would have been motivated to increase flexibility in the use of space around the medical imaging system so that additional equipment, such as patient life support and monitoring systems, would be conveniently arranged in the room housing the medical imaging system during imaging.

9. Claims 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burke et al. (5305363) in view of Okamura et al. (WO 03/002001 A1) and Anderton (Re 35,025).

With respect to claim 25, Burke et al. teaches a method of cooling an x-ray tube in an x-ray device where an auxiliary module (See Fig. 1 item 14 and 16) having a cooling unit is operatively connected to the x-ray device (See Fig. 1 where two unlabeled cooling liquid tubes are connected to (16), (14), x-ray tube (I) and then back to (16) forming a closed loop) in a removable fashion. (If the tubing can be connected, then it can be disconnected. Also, the tubing can be cut by any known means and thus removed.) The cooling unit produces chilled cooling liquid. (Heat exchanger (16) chills the cooling liquid.) The chilled liquid is passed from the cooling unit to the x-ray tube. (See unlabeled cooling liquid tubes noted above.) The chilled liquid is circulated (by pump (P), item 14) around at least a portion of the x-ray tube such that the chilled liquid absorbs heat produced by the x-ray tube during the imaging procedure. (Col. 15 line 1-11) Burke et al. also teaches the use of a cooling fluid that is a dielectric so that the cooling fluid does not short the anode to the housing. (See Col. 7 line 61-64) Burke et al. fails to teach the x-ray device is a mobile C-arm.

Art Unit: 2882

Okamura et al. teaches a method of cooling an x-ray device having a C-arm (See Fig. 2) with an auxiliary module having a cooling unit (7) that circulates (See arrows in Fig. 1) cooled water (5) to the x-ray device. The cooled water is used to cool insulating oil (3) via a heat exchanger (4). The oil is then circulated around at least a portion of the x-ray tube such that the chilled oil absorbs heat produced by the x-ray tube during the imaging procedure. (See Fig. 1 item 1-3)

Anderton teaches the method of making the C-arm x-ray device mobile. (See wheels in Fig. 1) Anderton also teaches the method of incorporating the use of a panel (17) for controlling the coupling of power and other devices to the mobile C-arm unit. (See Col. 4 line 28-30)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Burke et al., in which a dielectric liquid is circulated around the x-ray tube, to include the use of the C-arm structure of Okamura et al. and to accord mobility to the C-arm device while coupling external devices to the mobile C-arm through the use of a panel as described in Anderton since a person would have been motivated to have a method that allowed for the use of the more easily accessible C-arm structure that would be moved into position as necessary while taking advantage of the increased heat transfer efficiency and reduced weight in a system that required only a single circulating means that cooled the insulating oil directly and then circulated it directly around the x-ray tube. Additionally, it would have been obvious to utilize the panel (17) of Anderton to couple the cooling tubes to the mobile C-arm to reduce the weight of the C-arm thereby making it easier to move.

With respect to claim 27, Okamura et al. further teaches the method of permanently affixing the auxiliary module to a floor. (See Fig. 2)

10. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Busse et al. (6,669,366 B2) as applied to claim 25 above, and further in view of Okamura et al. (WO 03/002001 A1).

With respect to claim 28, Busse et al. teaches all the limitations of the invention except remotely locating the auxiliary module from the x-ray device.

Okamura et al. teaches remotely locating the auxiliary module from the x-ray device. (See Fig. 2 item 7 and 18)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mobile x-ray device of Busse et al. to allow one to remotely locate the auxiliary module as suggested by Okamura et al. since a person would have been motivated to reduce the weight of the mobile x-ray imaging device thereby increasing the ease of movement of the device and reduce the amount of exhaust heat expelled into the imaging room. Additionally, a person would have been motivated to remove the auxiliary cooling module from the mobile c-arm imaging device so that a higher capacity cooling module would be used, not limited by the space constraints of the mobile imaging device.

11. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Busse et al. (6,669,366 B2) as applied to claim 25 above, and further in view of Burke et al. (5,305,363).

With respect to claim 29, Busse et al. teaches all the limitations of the invention except for providing a booster battery pack in the auxiliary module and electrically connecting the booster battery pack to the x-ray device so that the x-ray device draws power from the booster battery pack.

Burke et al. teaches the auxiliary module further having of a booster battery pack electrically connected to the x-ray device so that the x-ray device draws power from the booster battery pack. (Col. 6 line 66 – Col. 7 line 4)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the auxiliary module of Busse et al. with the booster battery pack of Burke et al. since a person would have been motivated to reduce peak power demand while continuing to utilize increase power output by charging the booster battery at a relatively low rate when the x-ray tube is not energized and drawing upon the battery at a higher rate while the x-ray tube was energized while maintaining the mobility of the system mounted on a mobile cart.

Response to Arguments

12. Applicant's arguments filed 7 August 2006 have been fully considered but they are not persuasive.

Applicant argues the following points in bold:

I. Burke Does Not Anticipate Claims 1-2, 4, 7-9, 19-20, And 23-24

A. Burke Does Not Describe An Auxiliary Module Removably Connected To Said Imaging Device Having A Cooling Unit Configured To Cool Liquid To A Chilled State And Circulate The Chilled Liquid That Is Cooled By The Cooling Unit Itself

The Applicant argues that, “Burke does not describe a cooling unit to cool the fluid to a chilled state.” The Examiner disagrees. To further illustrate the Examiner’s point, chilled is defined as “Subjected to a process that chills (in any sense)”, wherein chills is synonymous with “cools” which is defined as becoming less hot or reducing the temperature (Webster’s New International Dictionary of the English Language, Second Edition, unabridged, 1958). Burke et al. discloses a fluid that is subjected to a process that chills (in any sense), in that the fluid becomes less hot or the temperature is reduced. Furthermore, the Applicant has not assigned a special definition to the term chilled such as a temperature range or other physical parameter. The Applicant simply stated on page 9, lines 4-5, of the specification, “The cooling unit 32 is configured to pump, or otherwise supply, cooled (i.e. chilled) fluid”. The Applicant also states on page 14, lines 19-20, that “As the chilled fluid absorbs heat, the temperature of the chilled fluid increases”, which serves the identical function as the chilled fluid of Burke et al. Therefore, Burke et al. reads on the claims.

The Applicant further argues that, “Burke describes only a fluid by itself that is not cooled by any cooling device.” The Examiner disagrees. The heat exchanger (16) necessarily is a cooling device that cools the fluid.

The Applicant further argues that, "Burke does not describe a module that both cools and circulates cooling fluid ... as described in claims 1 and 19." The Examiner disagrees. As previously addressed in the Office Action dated 5 June 2006, an auxiliary module as recited in claims 1 and 19 has been interpreted as components that are specifically designed to perform a unique function and then configured to operate in a coordinated fashion as is described by Burke et al.

The Applicant further argues that, "Burke does not disclose that the circulating means, or the heat exchanger, is removably connected to the imaging system." The Examiner disagrees. As pointed out by the Applicant, "Removably connected means capable of being disconnected and subsequently reconnected." The circulating means of Burke et al. is capable of being disconnected and subsequently reconnected, by cutting and then reattaching or by any means of removing and reattaching. To put it another way, although Burke et al. does not seem to disclose a system including "means" for removably connecting the circulating means, Burke et al. does disclose a circulating means that is removably connected (i.e., that is capable of being disconnected and subsequently reconnected). Therefore, Burke et al. reads on the claims.

Furthermore, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies ("structures, such as check valves") are not recited in the rejected claim(s). Although the claims

Art Unit: 2882

are interpreted in light of the specification, limitations from the specification are not read into the claims.

B. Burke Does Not Describe An Auxiliary Module Comprising Both A Cooling Unit And A Booster Battery Pack

The Applicant argues that, “Burke ... does not describe a module that is removably connected”. The Examiner disagrees. As pointed out by the Applicant, “Removably connected means capable of being disconnected and subsequently reconnected.” The module of Burke et al. is capable of being disconnected and subsequently reconnected, by cutting and then reattaching or by any means of removing and reattaching. To put it another way, although Burke et al. does not seem to disclose a system including “means” for removably connecting the module, Burke et al. does disclose a module that is removably connected (i.e., that is capable of being disconnected and subsequently reconnected). Therefore, Burke et al. reads on the claims.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., “a single auxiliary module”) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Furthermore, as previously addressed in the Office Action dated 5 June 2006, an auxiliary module as recited in claim 19 has

Art Unit: 2882

been interpreted as components that are specifically designed to perform a unique function and then configured to operate in a coordinated fashion as is described by Burke et al.

II. Okamura Does Not Anticipate Claims 1-5, 7, And 9

A. Okamura Does Not Describe An Auxiliary Module Removably Connected To A Medical Imaging Device That Both Cools Liquid To A Chilled State And Circulates The Chilled Liquid

The Applicant argues that, "Okamura ... does not ... describe an auxiliary module that is **removably** connected (i.e., capable of being disconnected and subsequently reconnected) to an imaging device as recited in claim 1." The Examiner disagrees. As pointed out by the Applicant, "Removably connected means capable of being disconnected and subsequently reconnected." The module of Okamura et al. is capable of being disconnected and subsequently reconnected, by cutting and then reattaching or by any means of removing and reattaching. To put it another way, although Okamura et al. does not seem to disclose a system including "means" for removably connecting the module, Okamura et al. does disclose a module that is removably connected (i.e., that is capable of being disconnected and subsequently reconnected). Therefore, Okamura et al. reads on the claims.

The Applicant further argues that Okamura does not describe a module that by itself is able to "to cool liquid to a chilled state and circulate the chilled liquid to and from said imaging element, wherein the chilled liquid absorbs heat produced by said imaging element," as recited in claim 1. The Examiner disagrees. As previously addressed in the Office Action dated 5 June

2006, an auxiliary module as recited in claim 1 has been interpreted as components that are specifically designed to perform a unique function and then configured to operate in a coordinated fashion as is described by Okamura et al.

B. Okamura Does Not Disclose A Cooling Duct That Is Removably Connected To Said Imaging Element

The Applicant argues that Okamura does not describe cooling ducts that are removably **connected** to an imaging element as described in claim 5. The Examiner disagrees. As pointed out by the Applicant, “Removably connected means capable of being disconnected and subsequently reconnected.” The cooling duct of Okamura et al. is capable of being disconnected and subsequently reconnected, by cutting and then reattaching or by any means of removing and reattaching. To put it another way, although Okamura et al. does not seem to disclose a system including “means” for removably connecting the cooling duct, Okamura et al. does disclose a cooling duct that is removably connected (i.e., that is capable of being disconnected and subsequently reconnected). Therefore, Okamura et al. reads on the claims.

The Applicant further argues that Okamura does not describe a connection of any kind. The Examiner disagrees. Okamura et al. states in paragraph 15, “Here, the X-ray detector of the present invention may be arranged such that provides a plurality of X-ray detecting elements disposed two-dimensionally and flatly are hermetically sealed in a casing and a cooling tube, into which the heat transfer medium flows, is *thermally connected* to one of the surfaces of the

Art Unit: 2882

casing on which the X-ray detecting elements are disposed.” Therefore, Okamura et al. does describe connecting (i.e., thermal connecting).

III. Anderton Does Not Anticipate Claims 11-15 and 18

A. Anderton Does Not Describe An Auxiliary Module That Is Separate, Distinct, And Removably Connected Directly To A Medical Imaging Device

The Applicant argues that “Anderton does not ... [disclose] an auxiliary module that is separate, distinct, and removably connected (i.e., capable of being disconnected and subsequently reconnected) **directly** to a medical imaging device, as recited in claims 11-15.” The Examiner disagrees. As pointed out by the Applicant, “Removably connected means capable of being disconnected and subsequently reconnected.” The module with a battery of Anderton is capable of being disconnected and subsequently reconnected, by cutting and then reattaching or by any means of removing and reattaching. To put it another way, although Anderton does not seem to disclose a system including “means” for removably connecting the module with a battery, Anderton does disclose a module with a battery that is removably connected (i.e., that is capable of being disconnected and subsequently reconnected). Therefore, Anderton reads on the claims.

B. Anderton Does Not Disclose An Auxiliary Module That Is Permanently Affixed To One Of A Floor Or A Wall

The Applicant argues that the “auxiliary module can be ‘permanently affixed to one of a floor and a wall’ as recited in dependent claim 15 ... Thus, claim 15 does further limit ‘[t]he medical imaging **system** of claim 11.’” The Examiner disagrees. As previously addressed in the Office Action dated 5 June 2006, the claim has not been given patentable weight because it is narrative in form. The Applicant has failed to claim a structure or means to affix the medical imaging system to one of a floor or a wall.

IV. Yahata Does Not Anticipate Claims 11-12, 15-16, and 18

A. Yahata Does Not Disclose An Auxiliary Module Having A Booster Battery Pack... Wherein Said Auxiliary Module Is Separate, Distinct, And Removably Connected Directly To Said Medical Imaging Device

The Applicant argues that “Yahata does not ... describe ‘an auxiliary module having a booster battery pack ... wherein said auxiliary module is **separate, distinct, and removably connected (i.e., capable of being disconnected and subsequently reconnected)** directly to said medical imaging device’ as described in claim 11”. The Examiner disagrees. As pointed out by the Applicant, “Removably connected means capable of being disconnected and subsequently reconnected.” The module with a battery of Yahata et al. is capable of being disconnected and subsequently reconnected, by cutting and then reattaching or by any means of removing and reattaching. To put it another way, although Yahata et al. does not seem to disclose a system including “means” for removably connecting the module with a battery, Yahata et al. does

Art Unit: 2882

disclose a module with a battery that is removably connected (i.e., that is capable of being disconnected and subsequently reconnected). Therefore, Yahata et al. reads on the claims.

B. Yahata Does Not Disclose An Auxiliary Module That Is Permanently Affixed To One Of A Floor Or A Wall

The Applicant argues that the “auxiliary module can be ‘permanently affixed to one of a floor and a wall’ as recited in dependent claim 15 ... Thus, claim 15 does further limit ‘[t]he medical imaging system of claim 11.’” The Examiner disagrees. As previously addressed in the Office Action dated 5 June 2006, the claim has not been given patentable weight because it is narrative in form. The Applicant has failed to claim a structure or means to affix the medical imaging system to one of a floor or a wall.

V. Busse Does Not Anticipate Claims 1-4, 6-7, 25-26

The Applicant argues that “Busse ... does not describe a cooling unit that is part of ‘an auxiliary module that is removably connected (i.e., capable of being disconnected and subsequently reconnected) to (the) imaging device’ as recited in claim 1.” The Examiner disagrees. As pointed out by the Applicant, “Removably connected means capable of being disconnected and subsequently reconnected.” The auxiliary module of Busse et al. is capable of being disconnected and subsequently reconnected, by cutting and then reattaching or by any means of removing and reattaching. To put it another way, although Busse et al. does not seem to disclose a system including “means” for removably connecting the auxiliary module, Busse et al.

Art Unit: 2882

does disclose an auxiliary module that is removably connected (i.e., that is capable of being disconnected and subsequently reconnected). Therefore, Busse et al. reads on the claims.

The Applicant argues further that Busse does not “disclose a method of cooling an x-ray tube involving an auxiliary module that is connected ‘in a removable fashion to the mobile x-ray device’ as recited in claim 25.” Removable means capable of being removed. The module of Busse et al. is capable of being removed by cutting or any other means. To put it another way, although Busse et al. does not seem to disclose a system including “means” for connecting in a removable fashion, Busse et al. does disclose a module that is connected in a removable fashion (i.e., connected in a fashion that is capable of being removed). Therefore, Busse et al. reads on the claims.

The Applicant further argues that, “There is ... no support in Busse ... for an assertion that the module is ‘removably connected’ ... (i.e., capable of being disconnected and subsequently reconnected) as recited in claim 1.” The Examiner disagrees. As pointed out by the Applicant, “Removably connected means capable of being disconnected and subsequently reconnected.” The module of Busse et al. is capable of being disconnected and subsequently reconnected, by cutting and then reattaching or by any means of removing and reattaching. To put it another way, although Busse et al. does not seem to disclose a system including “means” for removably connecting the module, Busse et al. does disclose a module that is removably connected (i.e., that is capable of being disconnected and subsequently reconnected). Therefore, Busse et al. reads on the claims.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Corbett whose telephone number is (571) 272-8284. The examiner can normally be reached on M-F 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2882

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

30 October 2006

JmC


EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER